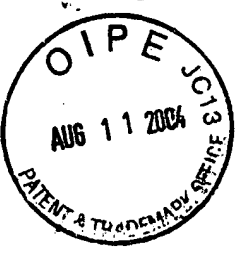


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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application: Pelley et al.	)	Group Art Unit: 1733
	)	
Serial No. 09/922,089	)	Examiner: Patricia L. Hailey
	)	
Filed: August 03, 2001	)	Atty. Docket No. 1948.ENV
	)	
For: Starch Based Adhesives		

BRIEF ON APPEAL

Commissioner for Patents  
Alexandria, VA 22313-1450

Sir:

Applicants hereby appeal the decision of the Primary Examiner finally rejecting claims 1-19, all pending claims. A timely Notice of Appeal was filed on March 8, 2004. A three month extension of time, extending the period for filing this brief until August 9, 2004 (August 8 being a Sunday), is being concurrently filed herewith

This Brief is being filed in triplicate. The fee, as required under 37 C.F.R. § 1.17(c), accompanies the filing of this Brief (fee transmittal form attached).

A copy of the claims involved in this appeal is set forth in Appendix I.

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I. Real party in interest

The real party in interest, as evidenced by the assignment document recorded September 7, 2001 (Reel 012150, Frame 0501), is National Starch and Chemical Investment Holding Corporation.

## II. Related appeals and interferences

There are no other appeals or interferences known to applicants which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

## III. Status of claims

Claims 1-19 are pending and have been finally rejected.

Claims 1, 2 and 9-11 stand finally rejected under 35 U.S.C. § 102 (b) as being anticipated by Eden et al. (U.S. Patent No. 5,688,845).

Claims 1-7 and 10-19 stand finally rejected under 35 U.S.C. § 102 (e) as being anticipated Lydzinski et al. (U.S. Patent No. 6,280,515).

Claims 1 and 8 stand finally rejected under 35 U.S.C. § 103 (a) as obvious over Eden et al. (U.S. Patent No. 5,688,845).

The rejections of claims 1-19 are being appealed.

## IV. Status of amendments

All amendments have been entered.

## V. Summary of invention

The invention is directed to adhesives that comprise a converted starch derivative and that have a flow viscosity of between 7 and about 20 seconds, more preferably between about 7 and about 12 seconds, even more preferably between about 9 and about 11 seconds. Preferred for use are octenylsuccinic anhydride modified starches and/or

propylene oxide modified starches. The adhesive formulations will preferably comprise, in addition to a converted starch derivative, a salt, a humectant, and/or a resin emulsion.

Applicants have discovered that the adhesives of the invention are particularly advantageous for use as seam gum adhesives in the manufacture of envelopes. The invention also encompasses envelopes and methods of making envelopes using the adhesive and envelopes comprising the adhesive. It has been discovered that a converted starch with a flow viscosity between about 7 and about 20 seconds, which starch contains functional groups, can be safely manufactured, has an unexpected gain in viscosity stability, good adhesion to a variety of stocks, including kraft, white wove, and bond stocks, good wet tack, acceptable penetration blocking, good drying speed and good machining characteristics when used in envelope converting machinery.

#### VI. Issues

A. WHETHER THE EXAMINER ERRED DETERMINING THAT THE SUBJECT MATTER OF CLAIM 1, 2 AND 9-11 ARE ANTICIPATED BY EDEN ET AL. (U.S. PATENT NO. 5,688,845).

B. WHETHER THE EXAMINER ERRED IN DETERMINING THAT THE SUBJECT MATTER OF CLAIMS 1-7 AND 10-19 ARE ANTICIPATED LYDZINSKI ET AL. (U.S. PATENT NO. 6,280,515).

C. WHETHER THE EXAMINER ERRED IN DETERMINING THAT THE SUBJECT MATTER OF CLAIMS 1 AND 8 ARE OBVIOUS OVER EDEN ET AL. (U.S. PATENT NO. 5,688,845).

D. WHETHER THE EXAMINER'S REJECTIONS OF CLAIMS 1-19 WERE CONSTRUCTED THROUGH THE IMPERMISSABLE USE OF HINDSIGHT.

#### VII. Grouping of claims

The patentability of claims 1, 7, 13, 14, 16 and 17 are to be separately determined.

Claims 2-6 and 8-12 stand or fall with claim 1.

Claim 15 stand or falls with claim 14.

Claims 18 and 19 stand or fall with claim 16.

### VIII. Arguments

A. The examiner erred in determining that claims 1, 2 and 9-11 are anticipated by Eden et al. (U.S. Patent No. 5,688,845).

Claims 1, 2 and 9-11 stand finally rejected under 35 U.S.C. § 102 (b) as being anticipated by Eden et al. (U.S. Patent No. 5,688,845).

Eden is cited as disclosing adhesive compositions comprising a converted derivatized starch. It is the examiner's position that that the flow viscosity recited in applicants' claims are inherent in the compositions described in the Eden disclosure.

Applicants submit that the claimed invention is not anticipated by Eden.

Eden fails to teach testing a starch at intervals during the conversion process, for flow viscosity, and to continue conversion until such a time as a desired flow viscosity is obtained. Eden does not teach the desirability of any particular flow viscosity. Applicants' have discovered that flow viscosity is critical to obtaining the proper balance of viscosity and percent solids in order to provide the desired processing properties on e.g., high speed converting equipment.

Eden fails to teach a water-based adhesive comprising a converted starch derivative that has a flow viscosity of from about 7 to about 20 seconds, as claimed in applicants' claims 1, 2, and 9-11. Applicants have discovered that adhesives comprising a converted starch derivative having a flow viscosity of from about 7 to about 20 seconds are particularly useful in the manufacture of envelopes. Applicants have discovered that

adhesives prepared from a derivatized converted starch selected for certain narrowly defined flow viscosity exhibit good adhesion, good wet tack, acceptable penetration blocking and good drying speed when. These attributes makes the adhesive claimed by applicants particularly useful as a seam gum adhesive in the manufacture of envelopes using high speed machinery.

Applicants have not, as urged by the examiner, merely defined a newly discovered property of converted derivatized starches. The examiner's assertion that all converted starch derivatives will inherently possess a flow viscosity of from about 7 to about 20, regardless of the starch, the type of derivation, the degree of derivatization, the type of conversion used, the extent of conversion, etc., will inherently have the same characteristics, e.g., performance properties and the like, is without merit. Applicants note U.S. Patent 5,599,569, of record, were a specific enzymatically converted starch to be used in the practice of the invention is one having a flow viscosity of 7 to 80 seconds. Clearly, applicants' selection of a converted starch derivative having a specific and narrowly defined flow viscosity will affect the characteristics of an adhesive prepared therewith. There is no teaching in Eden to use the specific type of starch (converted, derivatized, and having a specific flow viscosity) to prepare an adhesive.

Applicants submit that the claimed invention is patentable over the Eden. Reversal of the Section 102 (b) rejection of claims 1, 2 and 9-11 in view of the Eden disclosure is requested.

B. The examiner erred in determining that claims 1-7 and 10-19 are anticipated by Lydzinski et al. (U.S. Patent No. 6,280,515).

Claims 1-7 and 10-19 stand finally rejected under 35 U.S.C. § 102 (e) as being anticipated by Lydzinski et al. (U.S. Patent No. 6,280,515).

Lydzinski is cited as disclosing adhesive compositions comprising a converted derivatized starch and articles comprising such adhesives. The examiner maintains the position that that the flow viscosity recited in applicants' claims are inherent in the compositions described in the Lydzinski disclosure.

Applicants submit that the claimed invention is not anticipated by Lydzinski. Lydzinski fails to teach testing the starch, at intervals during the conversion process, for flow viscosity, and to continue conversion until such a time as a desired flow viscosity is obtained. Lydzinski does not teach the desirability of any particular flow viscosity. Applicants' have discovered that flow viscosity is critical to obtaining the proper balance of viscosity and percent solids in order to provide the desired processing properties on e.g., high speed converting equipment.

Lydzinski fails to teach a water-based adhesive comprising a converted starch derivative having a flow viscosity of from about 7 to about 20 seconds, as claimed in applicants' claims 1-7 and 10, or to use an adhesive comprising a converted starch derivative having a flow viscosity of from about 7 to about 20 seconds in the manufacture of articles, in particular, in the manufacture of envelopes or envelopes, as claimed in applicants' claims 11-19. Applicants have discovered that adhesives comprising a converted starch derivative having a flow viscosity of from about 7 to about 12 seconds, even more preferable from about 9 to about 11 seconds, are particularly useful in the manufacture of envelopes. Applicants have discovered that adhesives prepared from a derivatized converted starch selected for certain narrowly defined flow viscosity exhibit

good adhesion, good wet tack, acceptable penetration blocking and good drying speed when. These attributes makes the adhesive claimed by applicants particularly useful as a seam gum adhesive in the manufacture of envelopes using high speed machinery.

Applicants have not, as urged by the examiner, merely defined a newly discovered property of converted derivatized starches. The examiner's assertion that all converted starch derivatives will inherently possess a flow viscosity of from about 7 to about 20, regardless of the starch, the type of derivation, the degree of derivatization, the type of conversion used, the extent of conversion, etc., will inherently have the same characteristics, e.g., performance properties and the like, is without merit. Applicants again note U.S. Patent 5,599,569, of record, where a specific enzymatically converted starch to be used in the practice of the invention is one having a flow viscosity of 7 to 80 seconds. Clearly, applicants' selection of a converted starch derivative having a specific and narrowly defined flow viscosity will affect the characteristics of an adhesive prepared therewith. There is no teaching in the prior art to use the specific type of starch (converted, derivatized and having a specific flow viscosity) to prepare an adhesive or that such an adhesive will be particularly well suited for use in the manufacture of envelopes.

B1. The examiner erred in determining that claim 7 is anticipated by Lydzinski et al. (U.S. Patent No. 6,280,515).

Claim 7 is directed to a water-based adhesive comprising a converted starch derivative having a flow viscosity of from about 9 to about 12 seconds. Since Lydzinski fails to anticipate a water-based adhesive comprising a converted starch derivative having a flow viscosity of between about 7 and 20 seconds, Lydzinski also fails to anticipate a

water-based adhesive comprising a converted starch derivative having a flow viscosity of from about 9 to about 12 seconds. Applicants' selection of a converted starch derivative having a specific and narrowly defined flow viscosity, i.e., from about 9 to about 12 seconds, is not anticipated by Lydzinski.

B2. The examiner erred in determining that claims 13, 14, 16 and 17 is anticipated by Lydzinski et al. (U.S. Patent No. 6,280,515).

Claims 13, 16 and 17 are directed to envelopes. Claim 14 is directed to a method of making an envelope.

There is no disclosure in Lydzinski that teaches an envelope comprising a water-based adhesive comprising a modified starch derivative having a viscosity of between about 7 and about 20 seconds as required in claims 13 and 16 or the use of such an adhesive in the making of an envelope as required in claim 14.

As Lydzinski fails to teach envelopes comprising a water-based adhesive comprising a modified starch derivative having a flow viscosity of between about 7 and about 20 seconds, Lydzinski also fails to teach envelopes comprising a adhesive comprising a modified starch derivative having a flow viscosity of from about 7 and about 12 seconds as required in claim 17.

Applicants submit that the claimed invention is patentable over the Lydzinski.

Reversal of the Section 102 (e) rejection of claims 1-6 and 10-19 in view of the Lydzinski disclosure is requested.



C. The examiner erred in determining that claims 1 and 8 are obvious over Eden et al. (U.S. Patent No. 5,688,845).

Claims 1 and 8 stand finally rejected under 35 U.S.C. § 103 (a) as being unpatentable over Eden et al. (U.S. Patent No. 5,688,845).

Eden is again cited as disclosing adhesive compositions comprising a converted derivatized starch. The examiner maintains the position that that the flow viscosity recited in applicants' claims are inherent in the compositions described in the Eden disclosure.

It is well known that in order to establish a *prima facie* case of obviousness; three basic criteria must be met. First, there must be some suggestion or motivation, either in the reference(s) or in the knowledge generally available to one of ordinary skill in the art, for the modification. Second, there must be a reasonable expectation of success. Third, the prior art reference must teach or suggest all the claimed limitations. In addition, the teaching or suggestion to make the claimed invention and the reasonable expectation of success must both be found in the prior art, not in applicants' disclosure.

The examiner has failed to meet these requirements. There is no disclosure in Eden that would lead the skilled artisan to the claimed invention let alone provide any indication that such could be successfully accomplished.

Eden fails to provide any teaching or suggestion that would motivate a skilled artisan to test the starch, at intervals during the conversion process, for flow viscosity, and to continue conversion until such a time as a desired flow viscosity is obtained. The prior art does not teach or suggest the desirability of any particular flow viscosity.

Applicants' have discovered that flow viscosity is critical to obtaining the proper balance of viscosity and percent solids in order to provide the desired processing properties on e.g., high speed converting equipment.

Eden fails to describe or provide any disclosure that would motivate the skilled artisan to prepare an adhesive comprising a converted starch derivative having a flow viscosity of between about 7 to about 20 seconds, as claimed in applicants' claim 1, or suggest that modification occur following conversion of the starch as required in claim 8.

Applicants submit that the examiner has failed to establish a *prima facie* case of obviousness. Reversal of the examiner's Section 103 (a) rejection of claims 1 and 8 over the Eden is requested.

D. The examiner's rejection of claims 1-19 was constructed through the impermissible use of hindsight.

Neither Eden nor Lydzinski suggest or provide any motivation to use a modified starch derivative having a flow viscosity of between about 7 and about 20 in an adhesive, or articles, particularly envelopes, made using such an adhesive. There is no disclosure or suggestion, other than that provided in applicants' own disclosure, as to the desirability of selecting a particular starch having a flow viscosity as required in the practice of applicants' invention.

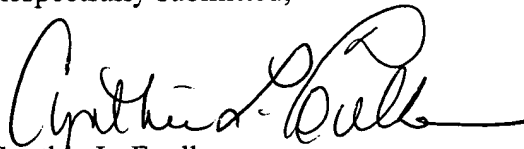
Applicants submit that the examiner's rejections of claims 1-19 were constructed through the impermissible use of hindsight and that the claimed subject matter is not anticipated by or render obvious over either of the Eden or the Lydzinski patent disclosures.

Reversal of the Section 102 and 103 rejections is requested.

Conclusion

Applicants submit that the claim subject matter is patentable over the prior art applied by the examiner. The rejection of record cannot be sustained and the Board is requested to reverse the examiner's rejection.

Respectfully submitted,

  
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## APPENDIX I

1. A water based adhesive comprising a converted starch derivative having a flow viscosity of between about 7 and about 20 seconds.
2. The adhesive of claim 1 wherein the adhesive further comprises a salt, a humectant, and/or a resin emulsion.
3. The adhesive of claim 2 wherein the humectant is dextrose, maltose or corn syrup solids.
4. The adhesive of claim 1 wherein the starch derivative is an organic anhydride modified starch or an hydroxy propylated starch.
5. The adhesive of claim 4 wherein the starch derivative is an octenylsuccinic anhydride modified starch.
6. The adhesive of claim 4 wherein the starch derivative is a propylene oxide modified starch.
7. The adhesive of claim 4 which has a flow viscosity of from about 9 to about 12 seconds.

8. The adhesive of claim 1 wherein the starch is derivatized following the conversion thereof.
9. The adhesive of claim 1 wherein the starch is derivatized then the derivatized starch is converted.
10. The adhesive of claim 1 wherein the starch is converted using an aqueous conversion process.
11. The adhesive of claim 1 wherein the starch is converted by acid, oxidation or thermal treatment.
12. An article of manufacture comprising the adhesive of claim 1.
13. The article of claim 12 which is an envelope.
14. A method of making an envelope comprising applying the adhesive of claim 1 to an envelope blank.
15. The method of claim 14 wherein the envelope blank is at least partially folded.

16. An envelope having applied on a surface thereof a water based seam gum adhesive comprising a converted starch derivative having a flow viscosity of between about 7 and about 20 seconds.

17. The envelope of claim 16 wherein the adhesive has a flow viscosity of from about 7 to about 12 seconds.

18. The envelope of claim 16 wherein the starch derivative is an octenylsuccinic anhydride modified starch or a propylene oxide modified starch.

19. The envelope of claim 18 wherein the starch is derivatized with octenylsuccinic anhydride or propylene oxide, and then converted.